



**moulton niguel** water district

# WATER RELIABILITY WORKSHOP

Special Board Meeting

April 15, 2016

# MEETING OBJECTIVES AND AGENDA

- Define water reliability
- Review planning efforts locally and regionally
- Understand future demand projections
- Understand changes to water reliability
- Discuss next steps regarding water reliability goals



# WHAT IS WATER RELIABILITY?

# WHAT IS WATER RELIABILITY?

- MNWD Definition of water reliability
  - Ability to sustain water deliveries to customers at acceptable service levels
  - What is Supply Reliability?
  - What is System Reliability?

# WHAT ARE KEY RELIABILITY DRIVERS?

- 75% of total water demand is currently supplied by Metropolitan Water District of Southern California
- Treated water provided via:
  - 65% from Diemer Filtration Plant in Yorba Linda
  - 35% from Baker Water Treatment Plant in Lake Forest (Fall 2016)
- Raw water provided via:
  - State Water Project
  - Colorado River Basin

# WHAT IS MNWD'S WATER RELIABILITY POLICY?

- 2 days of Average System Reliability in 2008
- MNWD Resolution No. 08-38
  - Adopted on November 13, 2008
  - Outlined Goal for System Reliability:
    - “Moulton Niguel Water District intends to develop adequate capacity and supplies through local facilities and regional projects, including both storage and water supply development, to provide at least a **31-day average** annual potable water supply to meet demands throughout the District in the event the MWD supply source to southern Orange County is interrupted on a short term basis as a result of emergency or planned water outages.”

# PAST MNWD RELIABILITY ACTIONS

- \$70M in reliability project investments
  - IRWD Interconnection
  - Upper Chiquita Reservoir
  - Baker Water Treatment Plant
  - Continued expansion of recycled water system
- Increased system reliability to 15 days
  - Based on 2012 average day demand
- Early actions focused on system reliability





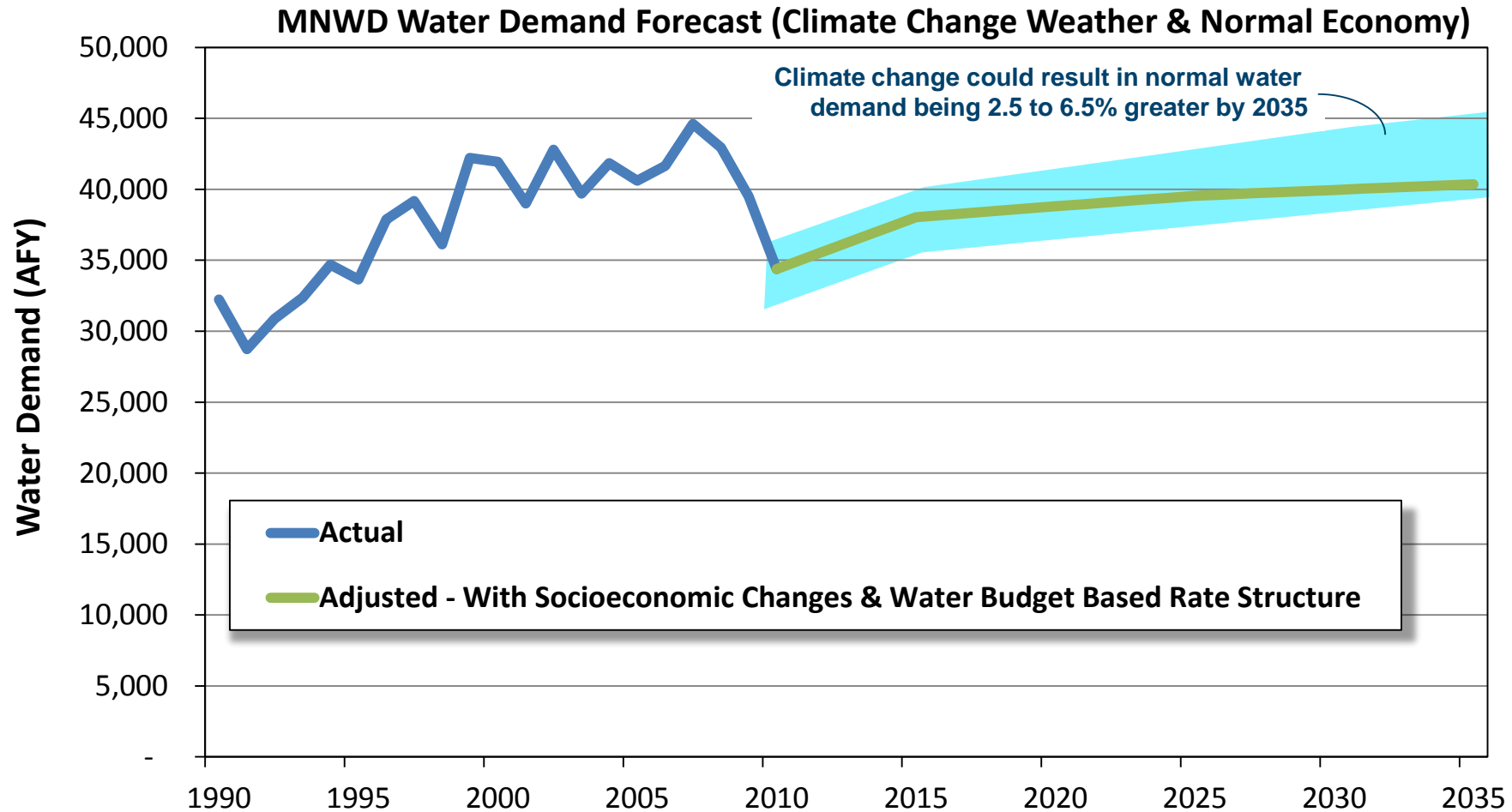
# 2012 LONG RANGE WATER RELIABILITY PLAN



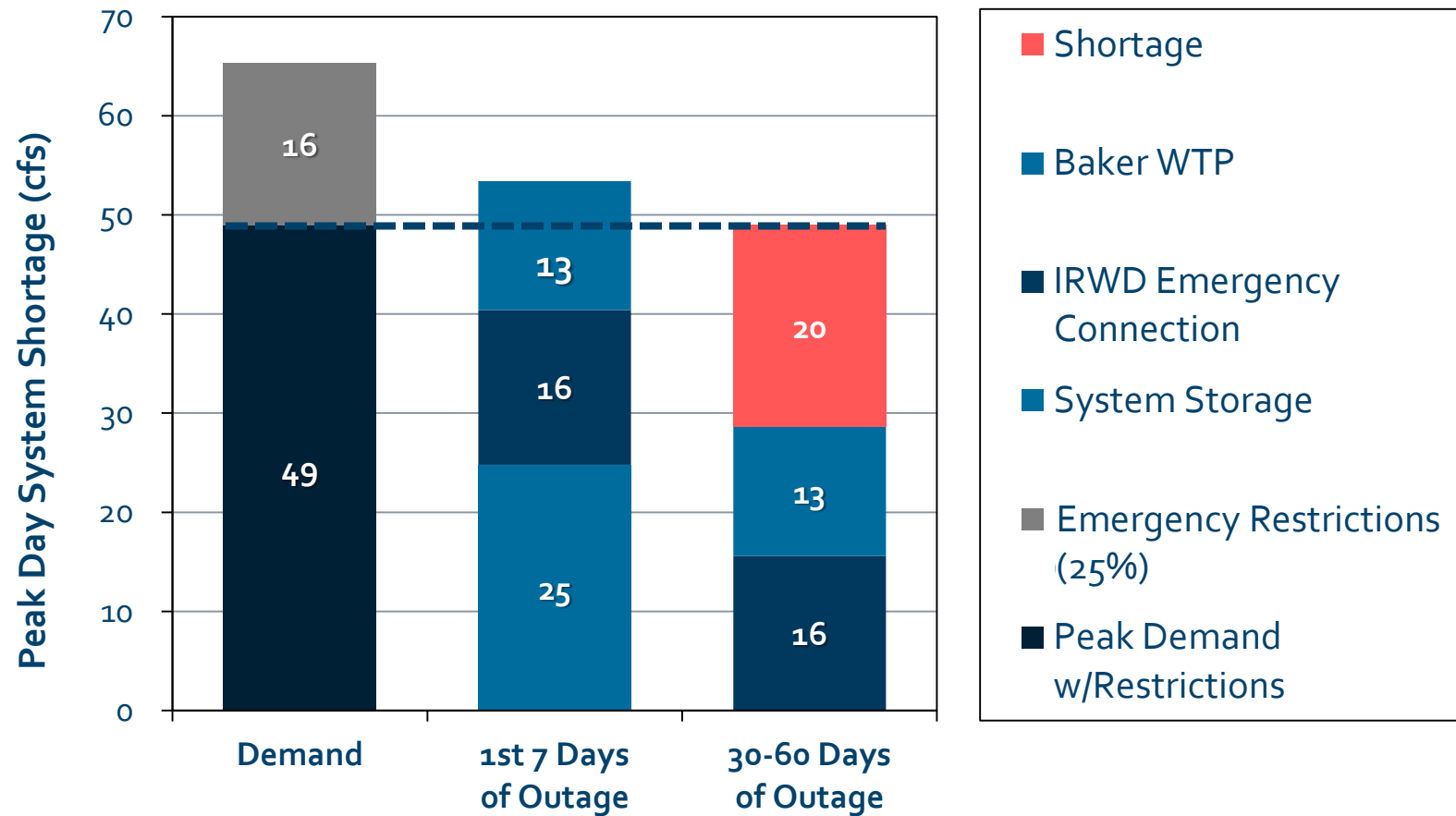
# LONG RANGE WATER RELIABILITY PLAN OBJECTIVES

- Quantify Available Water Supplies
- Determine System Reliability Needs
- Identify Potential Projects to Meet District Reliability Goals
- Develop a long-term Adaptive Implementation Strategy

# LRWRP – 2012 WATER DEMAND FORECAST



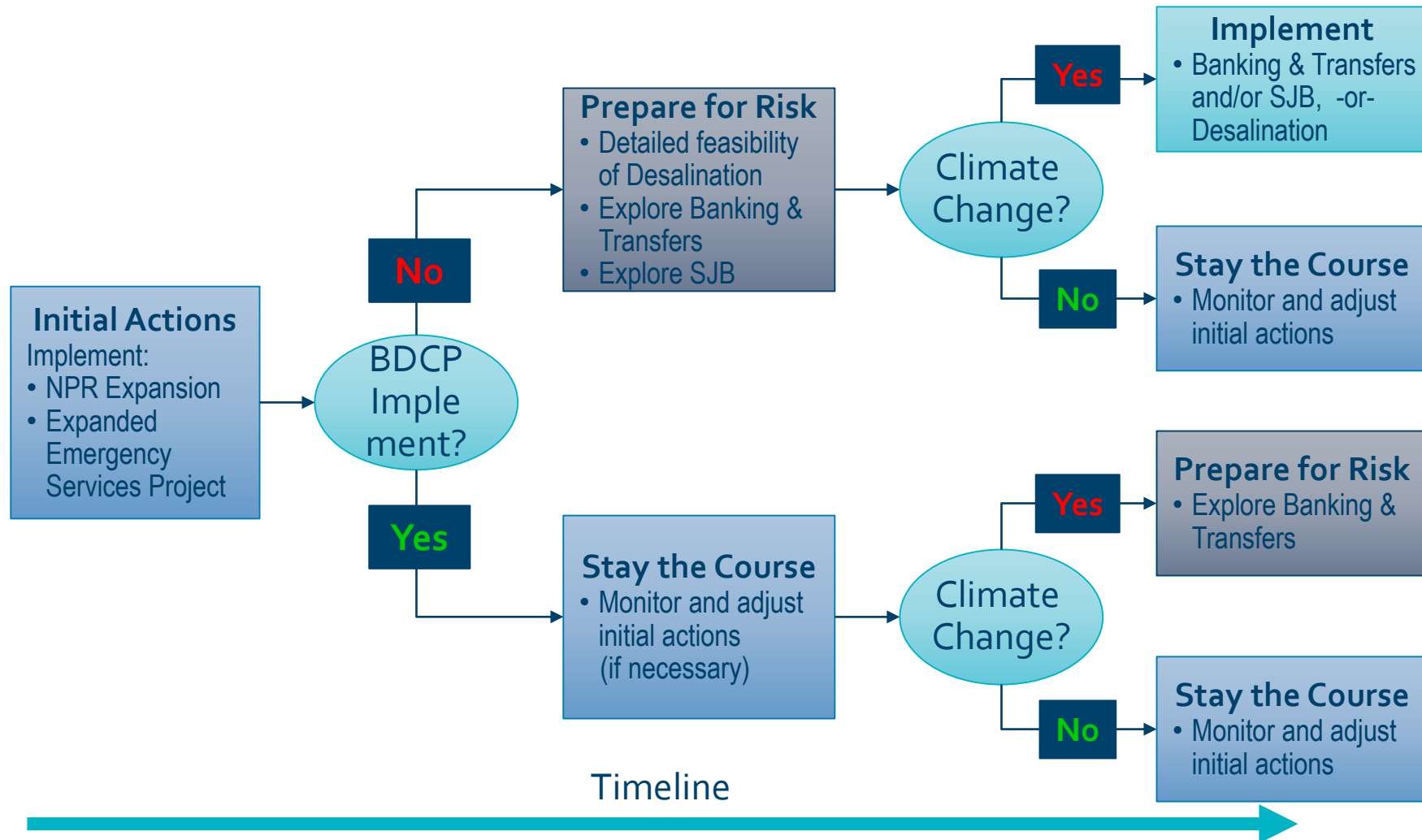
# REVISED SYSTEM GAP IN 2035



# WATER SUPPLY OPTIONS

- Non-Potable Reuse Expansion
- Expanded Emergency Services Program
- Expanded Groundwater in San Juan Basin
- Seawater Desalination
- Central Valley Water Banking
- Colorado River Water Transfer

# RECOMMENDED ADAPTIVE MANAGEMENT



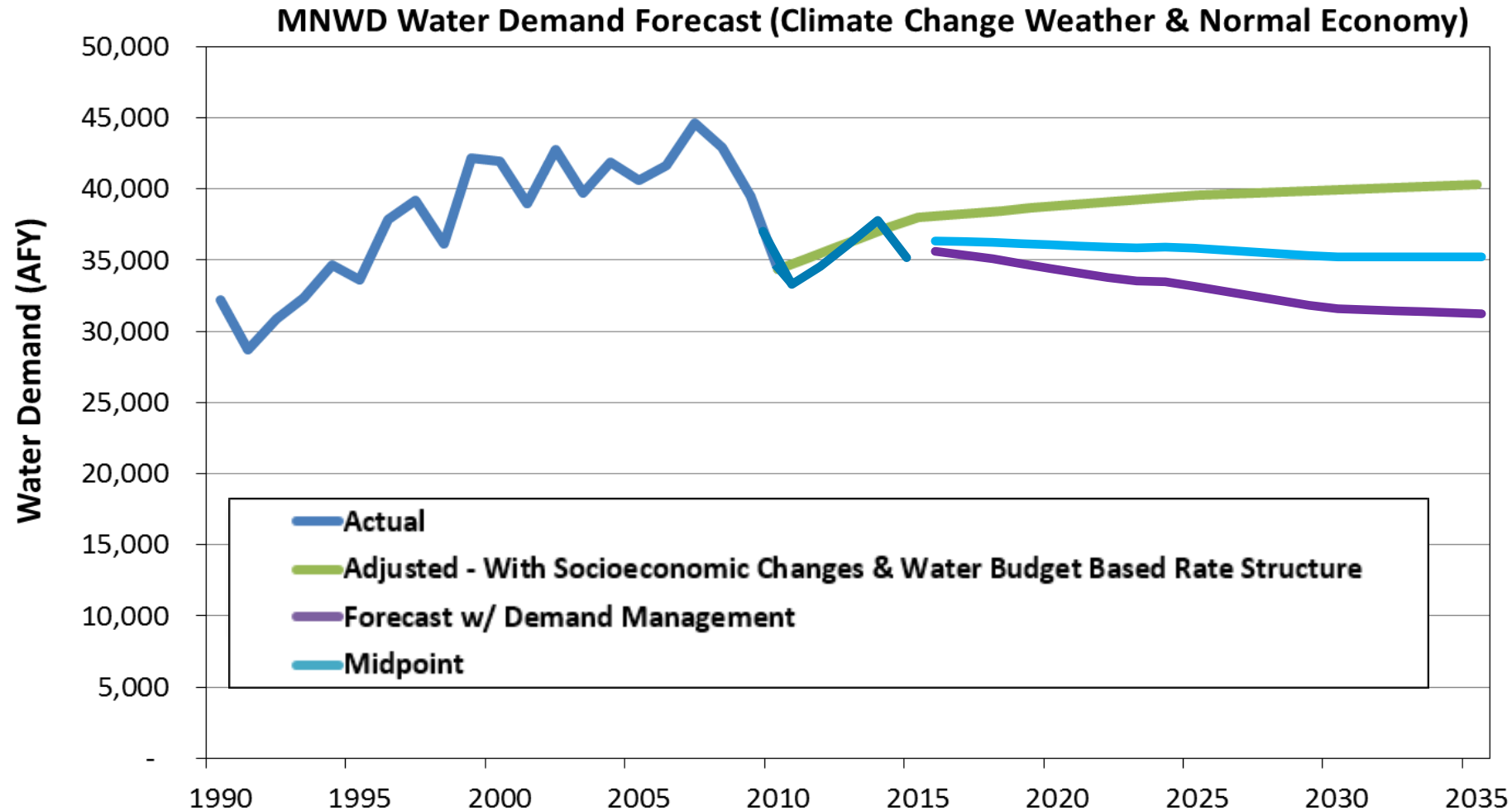


# WATER DEMAND PROJECTIONS- WHAT HAS CHANGED?

# DEMAND PROJECTION ASSUMPTIONS

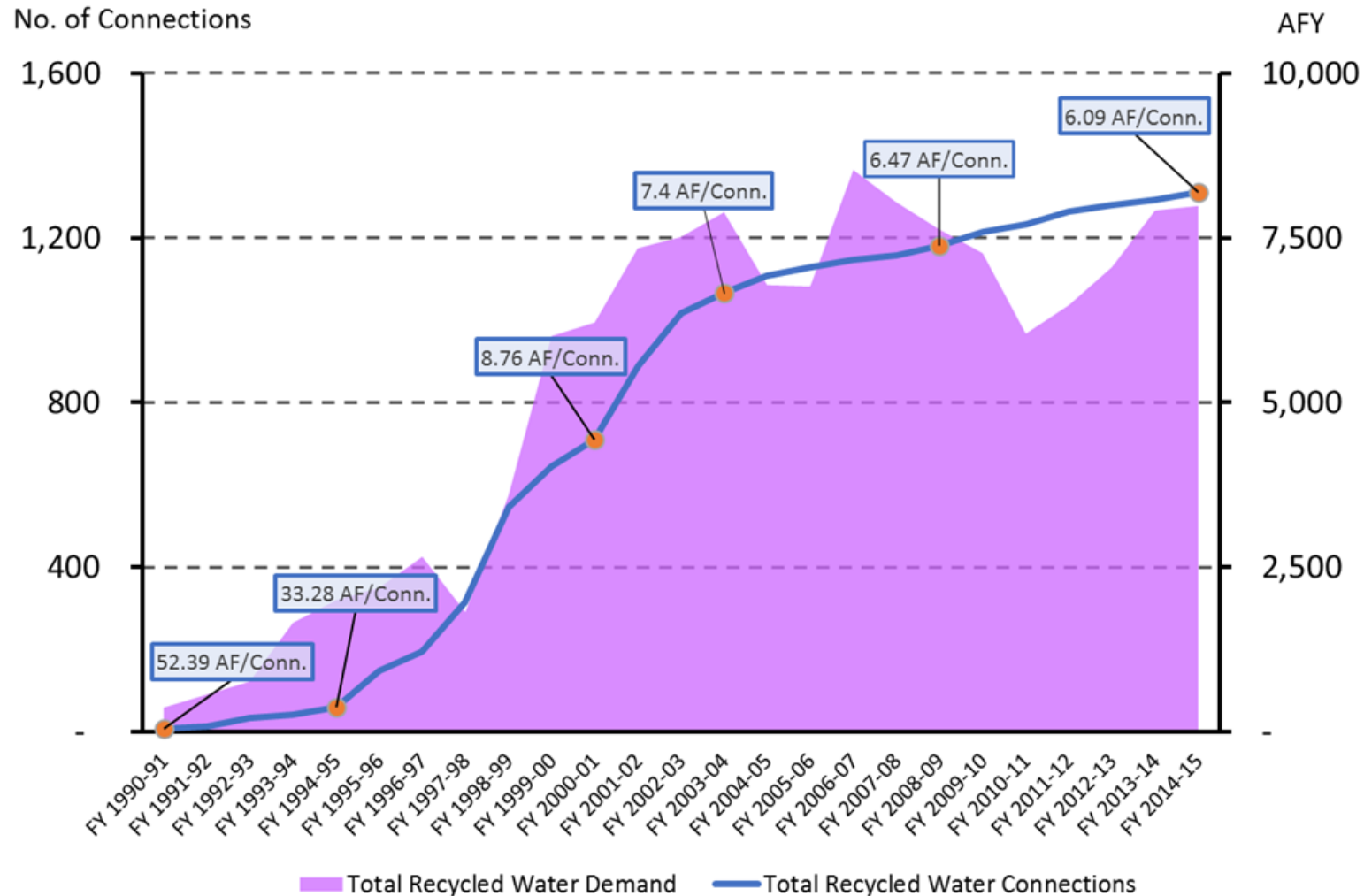
- Projection Range
  - Pre-Drought trend as upper bound
  - Continued comprehensive demand management as lower bound
    - Adjust water budgets over next 2 decades
    - Rebates
    - Marketing
  - Median used as 2015 UWMP demands
  - Consistent methodology w/ MWD & MWDDOC

# TOTAL WATER DEMAND FORECAST

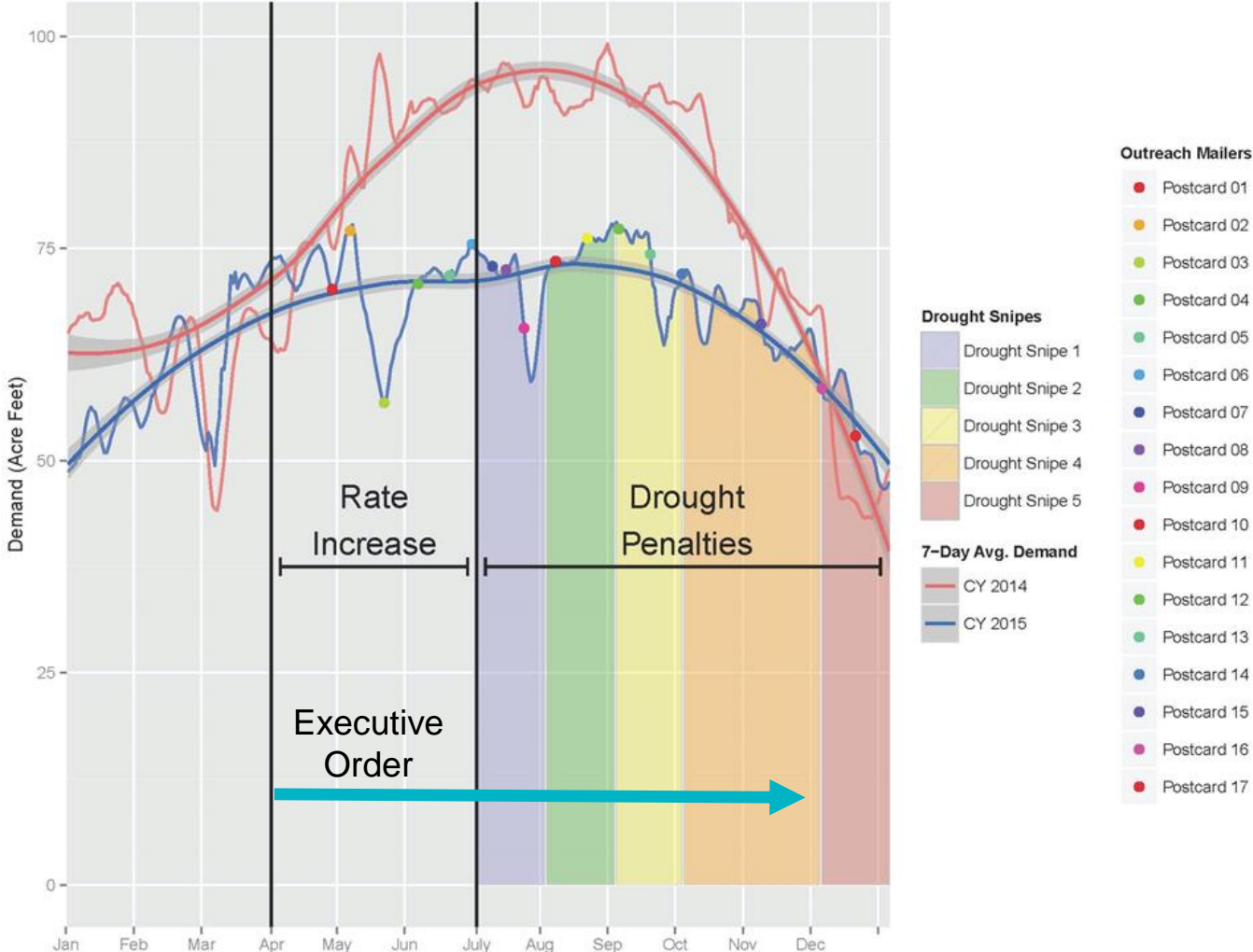




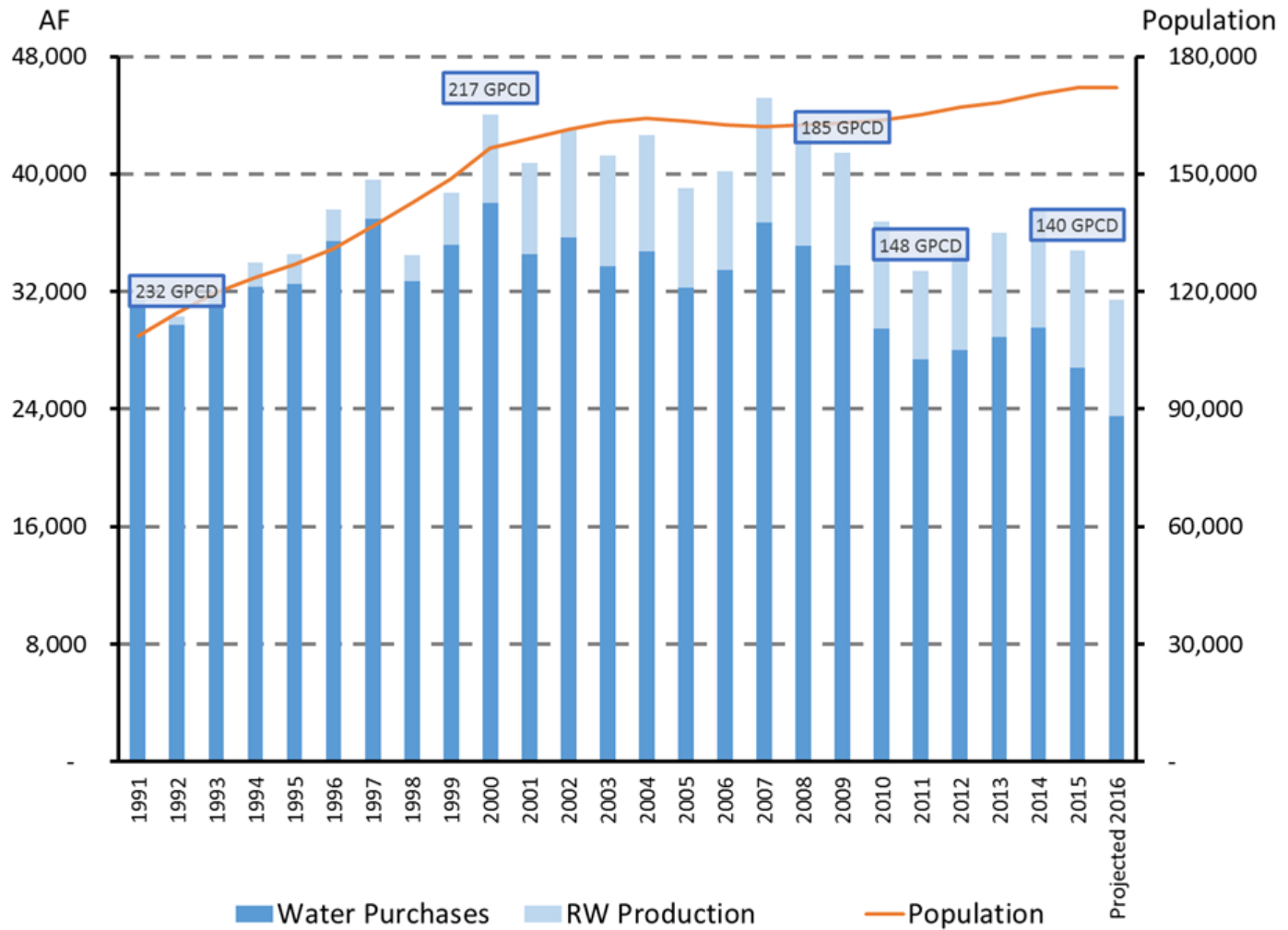
# EXPANSION OF RW



# INTEGRATED AND COMPREHENSIVE DEMAND MANAGEMENT

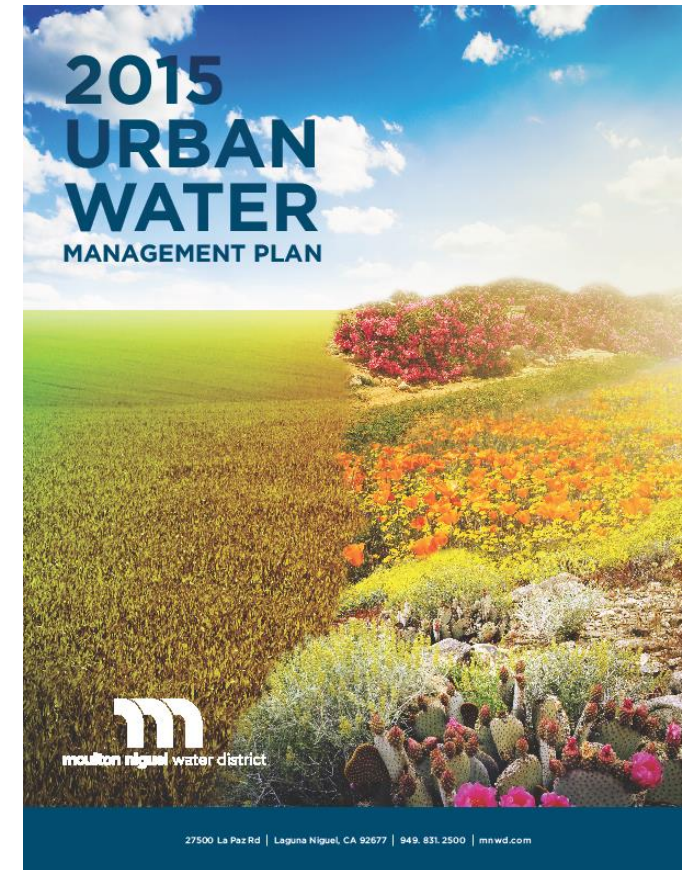


# DMM + RW = IN GOOD SHAPE



# HOW DOES THE URBAN WATER MANAGEMENT PLAN FIT INTO THE DISCUSSION?

- Key elements of the 2015 update of the MNWD Urban Water Management Plan
  - Future demand forecasts
  - Water supply forecasts from Metropolitan Water District of Southern California
    - Does not consider regional or local system outages
  - Supply forecasts reviewed under various dry-year scenarios
  - Planning considers MNWD water supply efforts, including:
    - New water supply opportunities, i.e. recycled water expansion
    - Demand management programs





# IMPACT OF DEMAND MANAGEMENT ON RELIABILITY OBJECTIVES

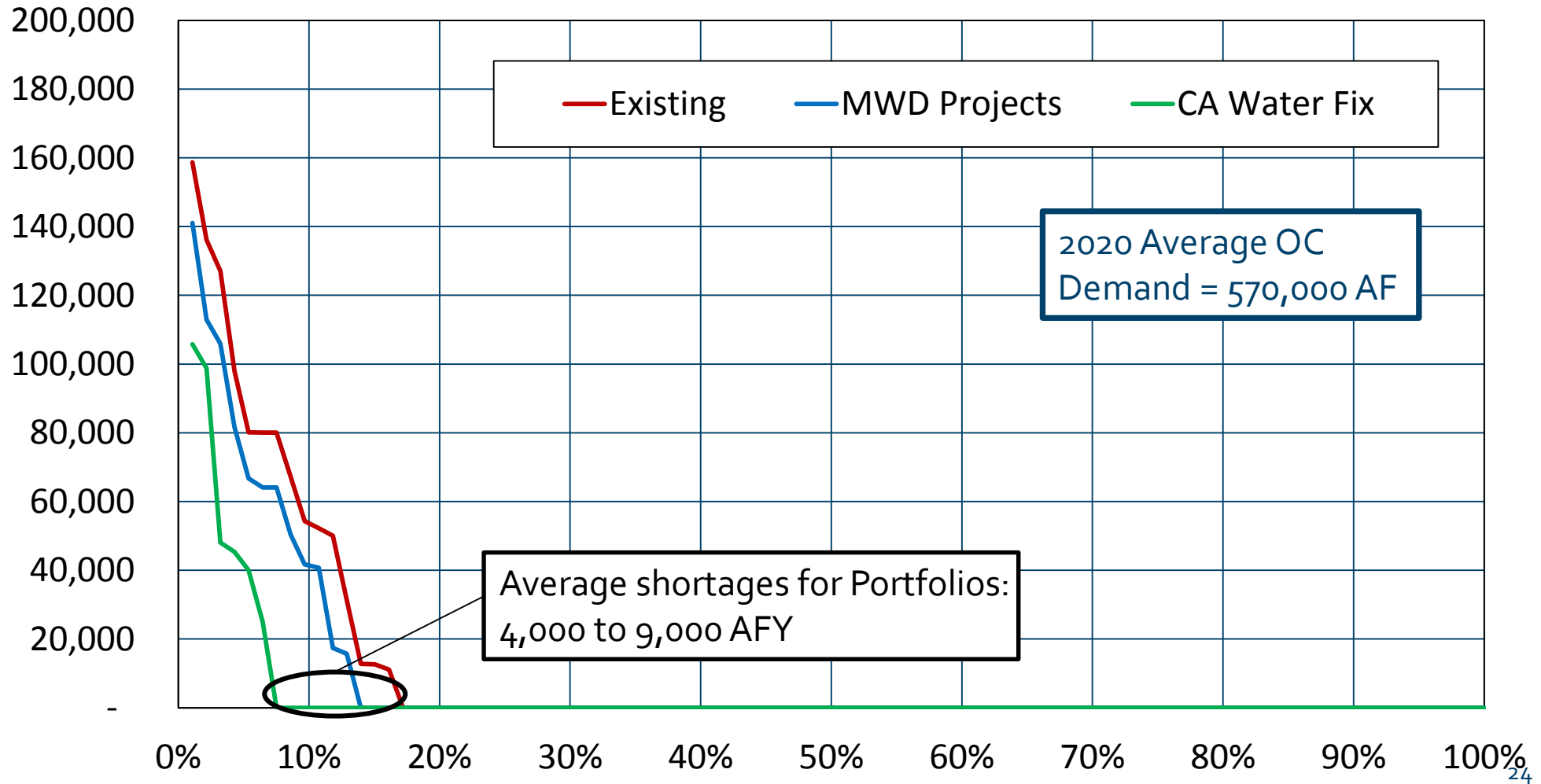
# WHAT IS IMPACT ON WATER SUPPLY RELIABILITY?

- MWD and MWDOC updating demand forecasts as part of 2015 UWMP updates
- Demand projections reduced across Southern California service areas
- Regional Planning Efforts:
  - MWD Integrated Resources Plan Update
  - MWDOC Orange County Water Reliability Plan

# MWD WATER SUPPLY PROJECTS

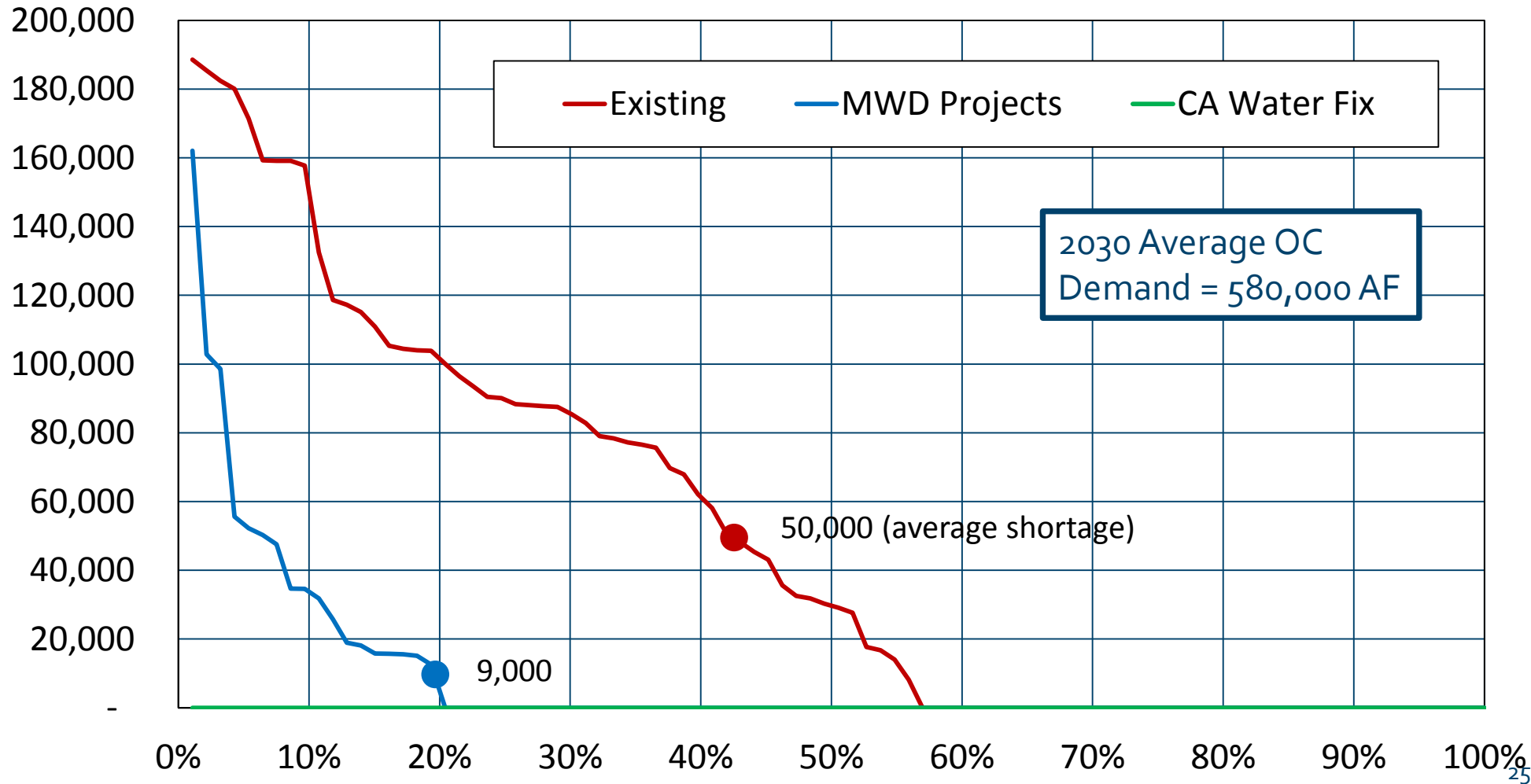
- Three MWD Supply Conditions Presented:
  - Existing Conditions – No New MWD Investments
  - California Water Fix
  - Highly Likely MWD Investments w/ Local Agency Projects:
    - Carson IPR Project
    - Water Transfers – Colorado River and Central Valley
    - PVID Land Purchase Program
    - Local Project Opportunities
      - LADWP GWR
      - San Diego Pure Water
      - IPR projects in Upper District and Eastern MWD
- Cost implications at MWD are currently being reviewed

# OC WATER SHORTAGE PROJECTIONS IN 2020

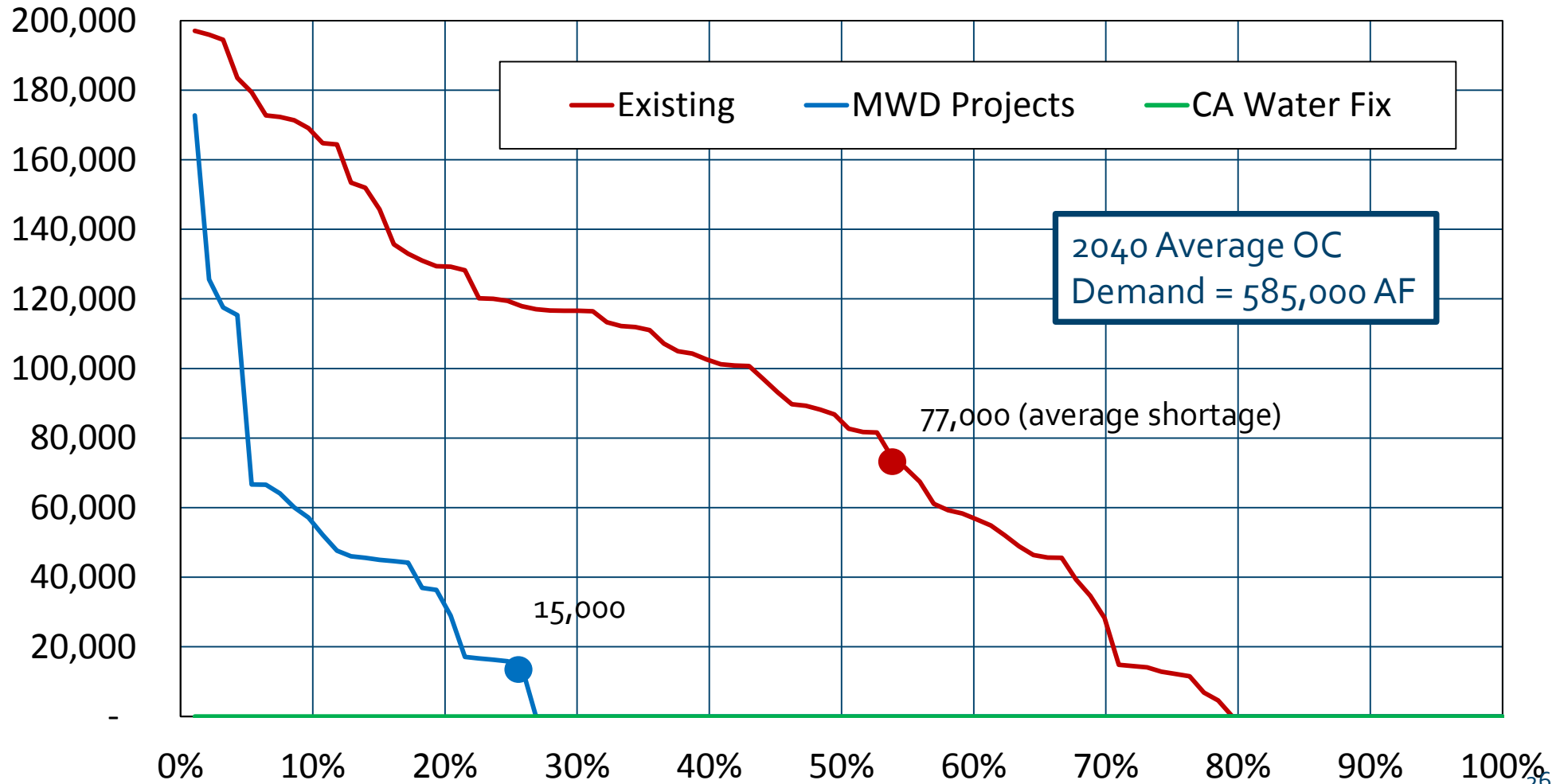




# OC WATER SHORTAGE PROJECTIONS IN 2030



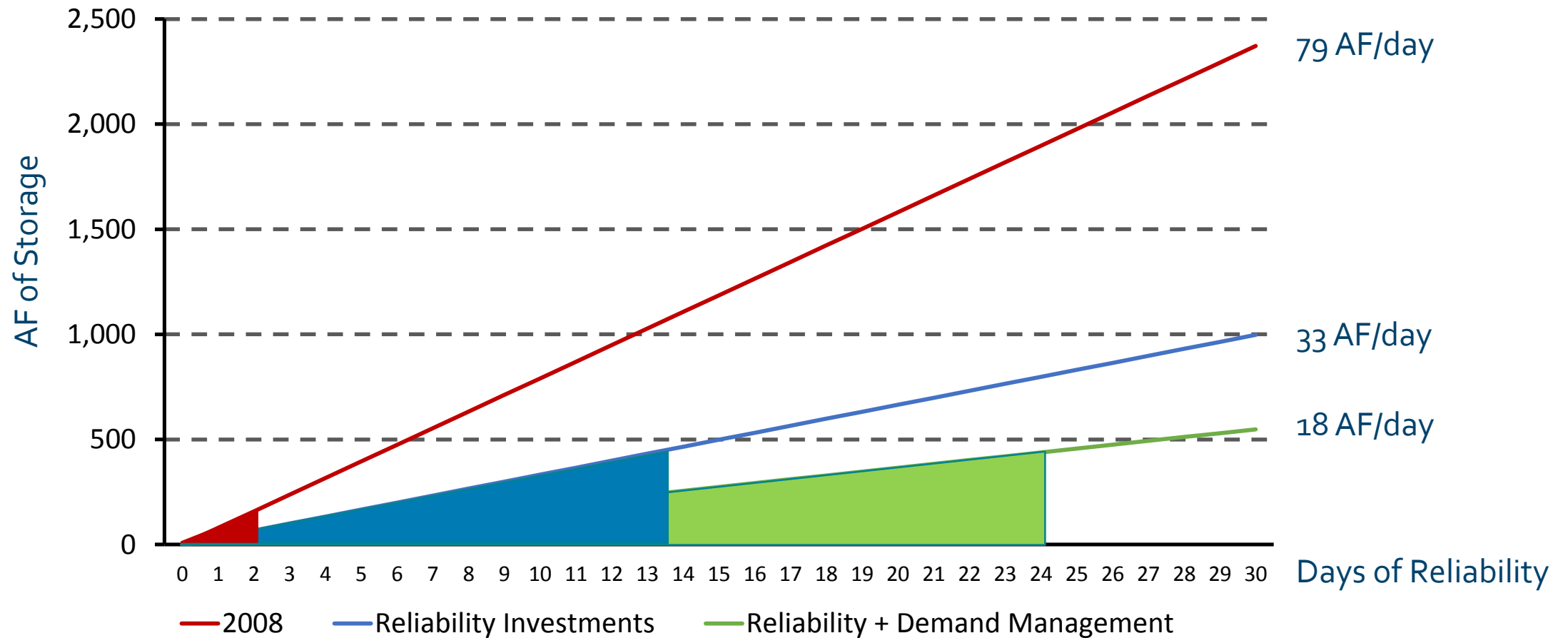
# OC WATER SHORTAGE PROJECTIONS IN 2040



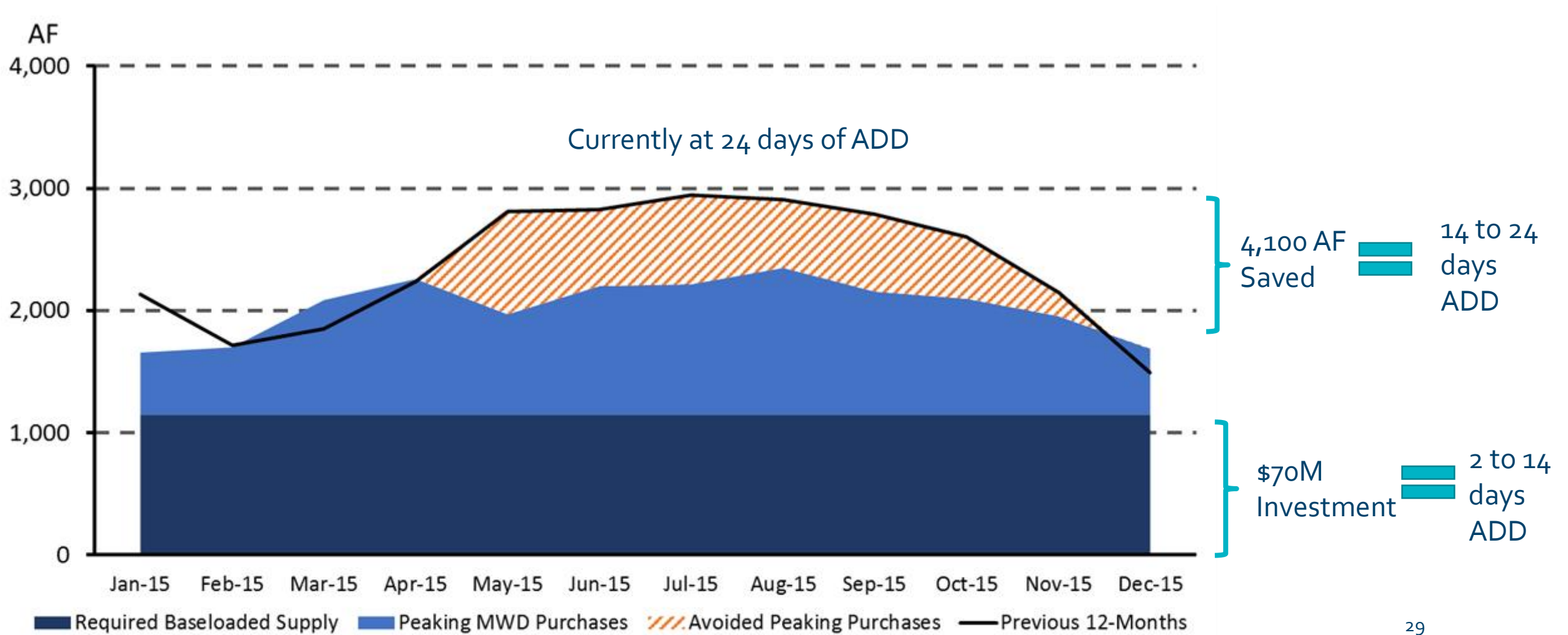
# WHAT IS IMPACT ON WATER SYSTEM RELIABILITY?

- Reduced demands increase system reliability:
  - Peak demand shaving increases system reliability in max months
  - Overall demand reductions increase reliability in average months
- Base-Loaded Supplies
  - Baker Water Treatment Plant (13 cfs)
  - East Orange County Feeder #2 (6 cfs)

# SYSTEM RELIABILITY IMPROVEMENT



# DEMAND MANAGEMENT IMPACTS TO RELIABILITY



# WHAT ARE NEXT STEPS FOR MNWD?

- MWD has viable programs to increase supply reliability
  - Support the CA Water Fix – Best Alternative to increase supply reliability
- Complete Recycled Water Master Plan
  - System Expansion
  - Seasonal Storage
- Continue implementation of Demand Management Programs
- Consider Expansion of OCWD Emergency Services Program
  - Additional base-loaded supplies must be strategic
  - Local storage is the most beneficial
- Investments should be cost-effective at meeting District needs



# DEMAND MANAGEMENT PROGRAMS 2016/2017

# OVERALL DEMAND MANAGEMENT STRATEGY

Phase in programs based on:

- Iterative research and evaluation based on our customers
  - UCR Phased results- Phase 1 Complete
  - Stanford Marketing Research
  - Data Collaborative to learn from others
- Customer feedback
- Customer participation



# DIRECT INSTALL PROGRAMS

- UC Riverside Focus Groups
  - “Make it easier to participate in rebates”
  - “Water budget decrease time to participate”
- Target Outdoor Water Use
  - Smart Timers
  - Turf Removal
- Create a simple, low customer time investment to do water efficiency right



# DIRECT INSTALL PROCESS

- Customer applies on Web Portal
- Application reviewed and sent to vendor
- Vendor works with customer on scheduling
- Customer works with vendor on project, District covers portion of cost
- Project follow-up to confirm maintenance and answer questions



# AMI PILOT

- Hourly reads for 4,450 customers
  - All 1,300 RW Customers
  - All 1,350 Potable Irrigation Customers
  - 1,800 residential on past AMI system
- Test leak detection on full distribution system AMI deployment
- Customer portal
  - Provides near real time usage
  - Provides projected bill, water budget
- Evaluate for full District deployment



# MARKETING

- Project to collect emails to implement more email communication
  - Not possible 12 months ago (only 5%, now have 60%)
- Provides customers with information in preferred format
- Target outreach materials using billing information
  - High water use
  - Irrigable area
  - Autopay vs paper bill
- Stanford Marketing Study runs May and September
  - Tests different targeted messages to provide cost-effective strategy

# RATE REVIEW

- UC Riverside Study
  - Water Budget rates mitigate “peaking” and reduce “inefficient” water usage
- Continue to refine rate structure
- December 2016 kickoff next rate study
- New Prop 218 process for rates effective 1/1/2018



# RECYCLED WATER MASTER PLAN

# RECYCLED WATER MASTER PLAN

- Goals:
  - Optimize wastewater resources through recycling
  - Identify existing and future recycled water supplies
  - Identify cost-effective recycled water system expansion opportunities
  - Maximize recycled water availability
  - Optimize recycled water transmission and distribution system
  - Evaluate inter-agency opportunities

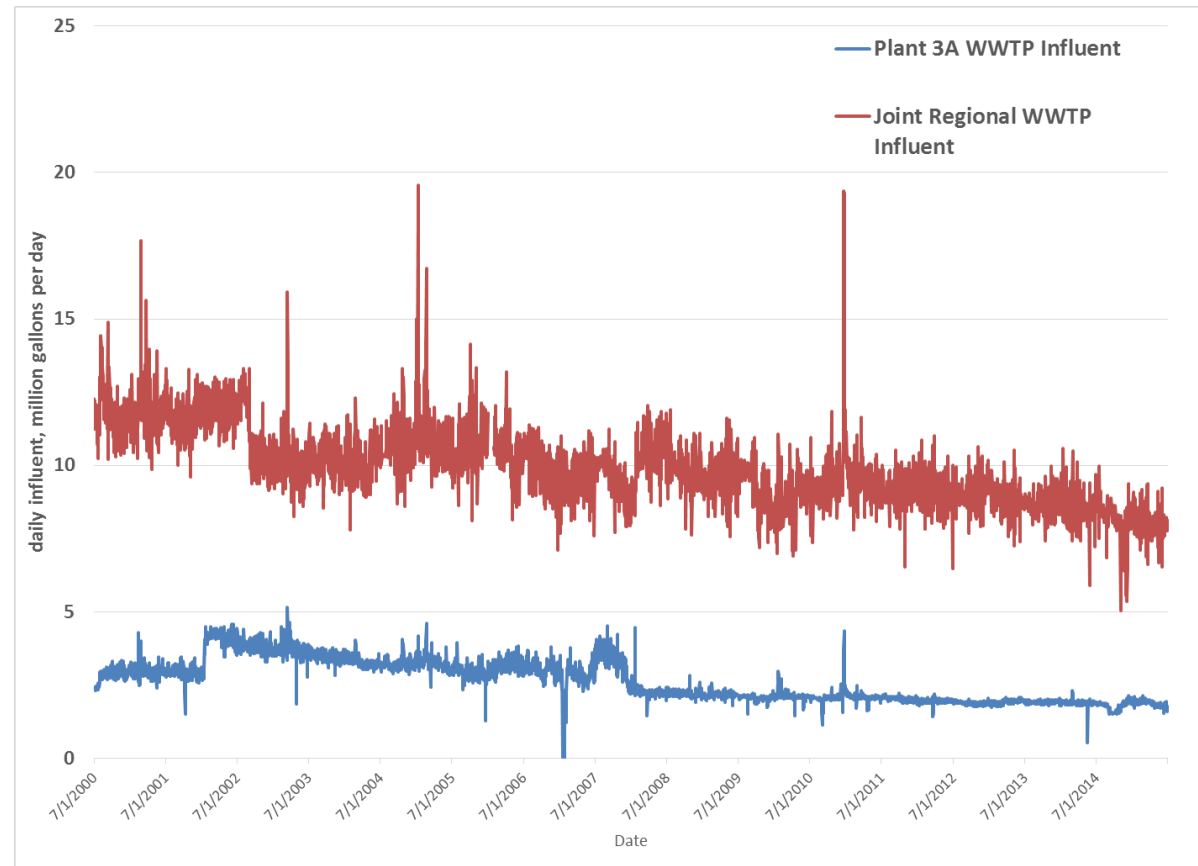
# RECYCLED WATER MASTER PLAN

TASK NO.	TASK	2015-2016													
		Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
	Award Consulting Contract	◆													
1	Project Administration & Management														
2	Data Collection and Review														
3	Regulatory Overview														
4	Recycled Water Market & Demand Assessment														
5	Recycled Water Supply														
6	Seasonal and Operational Storage Needs														
7	Hydraulic Model Update														
8	Time Management and User Scheduling Plan														
9	Existing System Analysis														
10	Proposed System Analysis														
11	Inter-Agency Opportunities														
12	Capital Improvement Program														
13	Report														



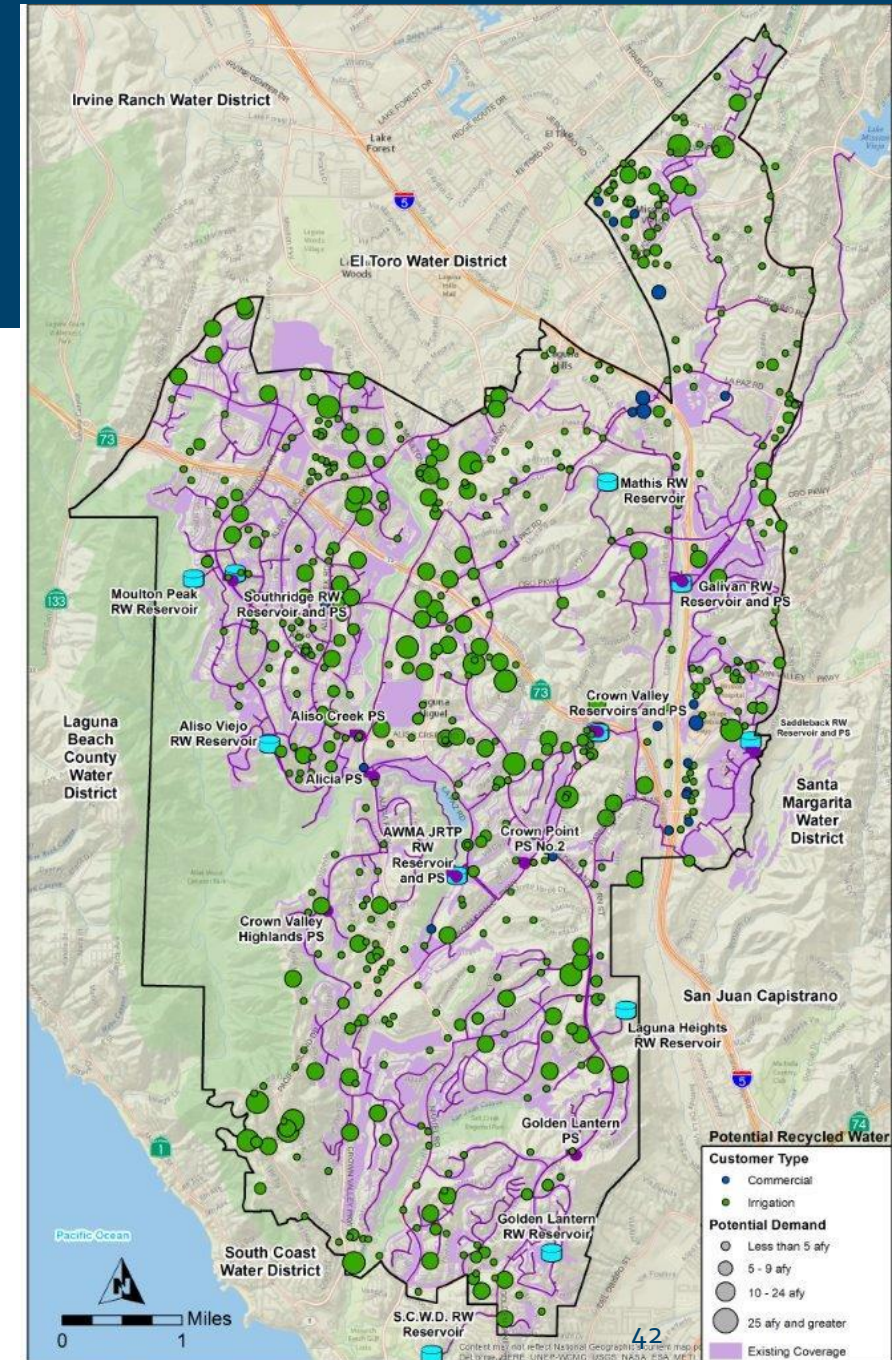
# RECYCLED WATER SUPPLY

- Current influent
  - Joint Regional WWTP – 8 mgd
  - Plant 3A WWTP – 1.9 mgd
  - JB Latham WWTP – 1 to 1.5 mgd
  - About 11 mgd or 12,300 acre-feet per year
- Projected influent
  - Affected by conservation – 5 gpcd drop
  - About 10.3 mgd or 11,500 acre-feet per year



# MARKET ASSESSMENT

- FY 2014-15
  - Recycled water sales – 7,412 acre-feet
  - Potable irrigation sales – 3,641 acre-feet
  - Irrigation sales to commercial customers with combined irrigation meters – 200 acre-feet
- Selection of Target Customers
  - Customers considered – 1,361
  - Screening tool
    - Use amount, location
  - Narrowed to 166 customers with 2,351 afy potential recycled demand

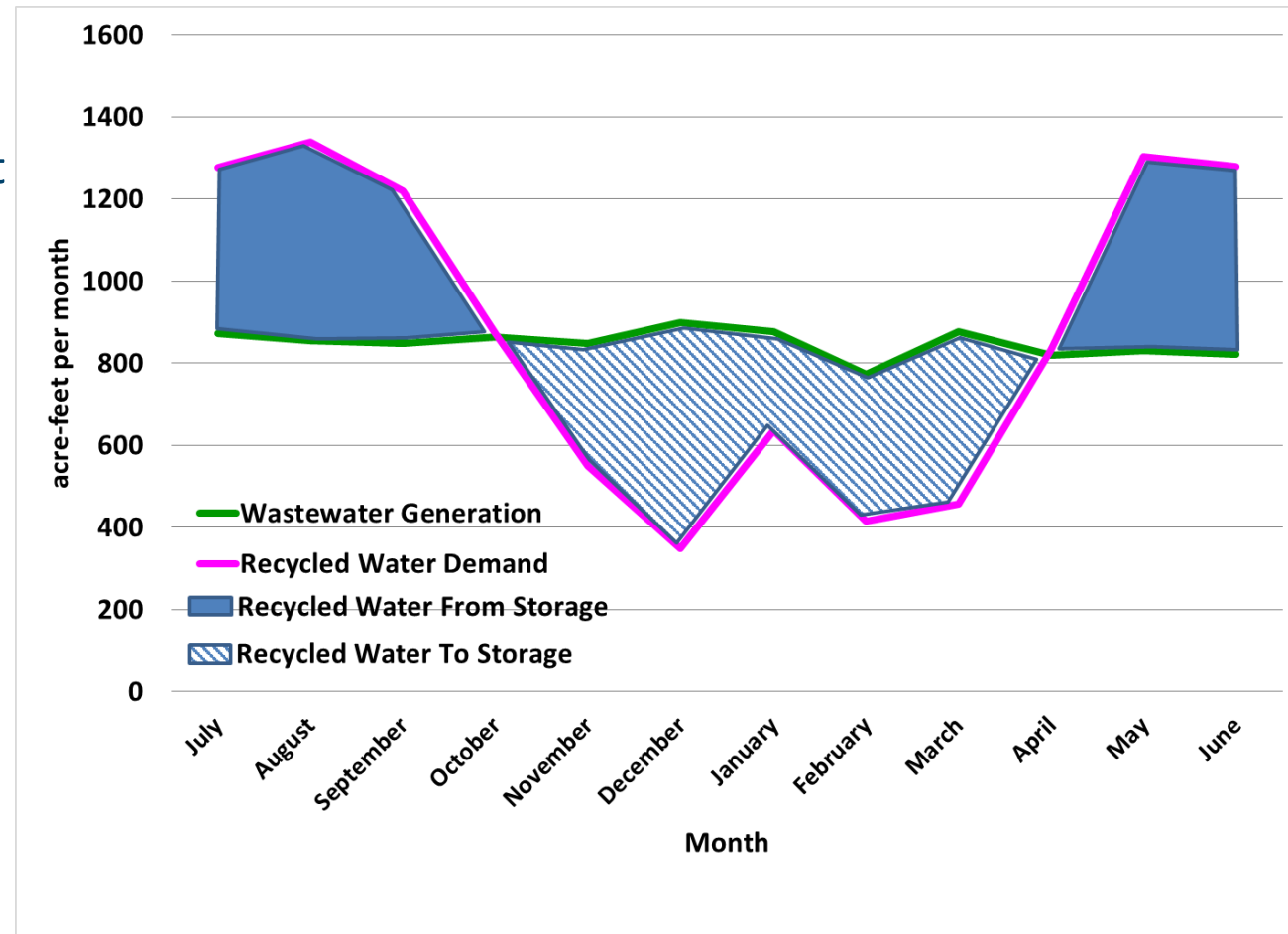


# RECYCLED SYSTEM EXPANSION

- Preliminary results
  - 20 miles of pipes
  - \$37 million
- Refine analysis
  - Cost and benefit assumption
  - Hydraulic analysis
  - Implementation screening

# RECYCLED WATER STORAGE

- Seasonal Storage
  - Current
    - Upper Oso Reservoir: 1,000 acre-feet
  - Additional Storage – 750 acre-feet
    - Trampas Reservoir - \$15 million



# RECYCLED WATER MASTER PLAN – NEXT STEPS

- Complete system analysis
- Finalize cost impacts
- Evaluate regulatory climate
  - Indirect potable reuse
  - Direct potable reuse
  - Title 22
- Evaluate inter-agency opportunities
  - El Toro Water District
  - City of San Juan Capistrano
  - City of Laguna Beach
  - Santa Margarita Water District
- Finalize Capital Improvement Program
- Prepare Report



# ORANGE COUNTY GROUNDWATER BASIN

# EMERGENCY SERVICES PROGRAM

- Allows for withdrawal of water from the OCWD basin during emergency conditions
  - 50 cfs from the basin for a maximum of 30 days
  - Not to be utilized during drought or MWD allocations
- Developed IRWD Interconnection to exercise Agreement
  - Project delivery up to 15 cfs to District
  - Diminishing supplies over time
- Recommend evaluating options for expanded program
  - Utilize IRWD system; System evaluation in process
  - Direct transfer through East Orange County Feeder #2

# ADDITIONAL OCWD BASIN OPPORTUNITIES

- Poseidon Project Update
  - Poseidon working on Coastal Commission Permit
  - OCWD evaluating product water delivery alternatives
- Local water introduction into East Orange County Feeder #2

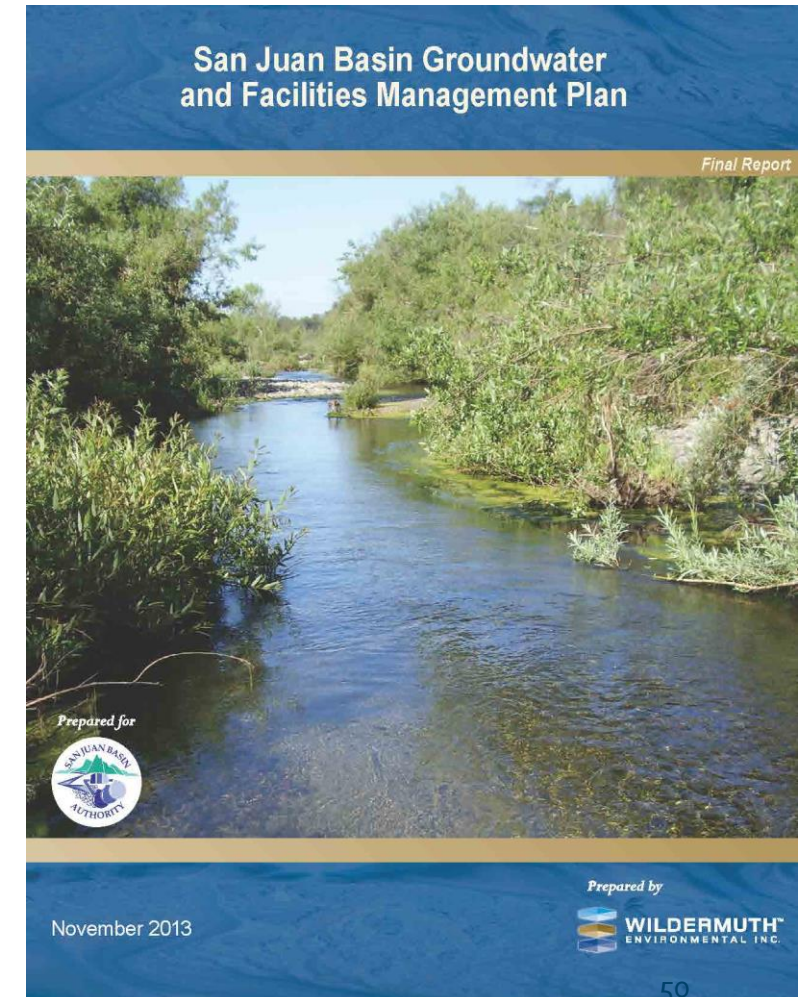




# SAN JUAN BASIN AUTHORITY

# UPDATED GROUNDWATER AND FACILITIES MANAGEMENT PLAN

- Developed for the SJBA
  - Initiated in 2010
  - Adopted in 2014
- Identified an adaptive production strategy based on the available storage in the basin
- Developed enhanced program alternatives for increasing the yield of the basin
  - Stormwater capture
  - Recycled water recharge
  - Seawater extraction barrier



# DEVELOPED SAN JUAN BASIN GROUNDWATER AND DESALINATION OPTIMIZATION PROGRAM

- Surface Water Recharge Strategies

- SWR-1: Storm Water Capture Rubber Dams + Seawater Barrier
- SWR-2: Storm Water Capture Rubber Dams + Seawater Barrier + Recycled Water Recharge using Rubber Dams
- SWR-3: Recycled Water “Incidental Recharge” + Seawater Barrier
- SWR-4: Storm Water Capture Rubber Dams + Seawater Barrier + Recycled Water Recharge using Rubber Dams + Recycled Water “Incidental Recharge”

- Groundwater Injection Strategies

- INJ-1: Recycled Water Injection (2,500 AF) + Seawater Barrier
- INJ-2: Recycled Water Injection (4,000 AF) + Seawater Barrier

# DEVELOPED SAN JUAN BASIN GROUNDWATER AND DESALINATION OPTIMIZATION PROGRAM

- Feasibility Study
  - All Injection scenarios were eliminated from further analysis due to the regulatory treatment requirements
  - Seawater Barrier was eliminated from further analysis due to the high cost and limited yield
- Final Concept Strategies via a phased approach

	Surface Water Recharge Strategies		
	Phase 1	Phase 2	Phase 3
Description	Storm water via Rubber Dams on San Juan Creek	Storm water and Recycled Water via Rubber Dams on San Juan Creek	Expanded Recycled Water Recharge on San Juan Creek
Avg. Annual New Project Yield (afy)	1,120	4,920 (includes 1,120 from Phase 1)	7,360 (includes 4,920 from Phase 2)

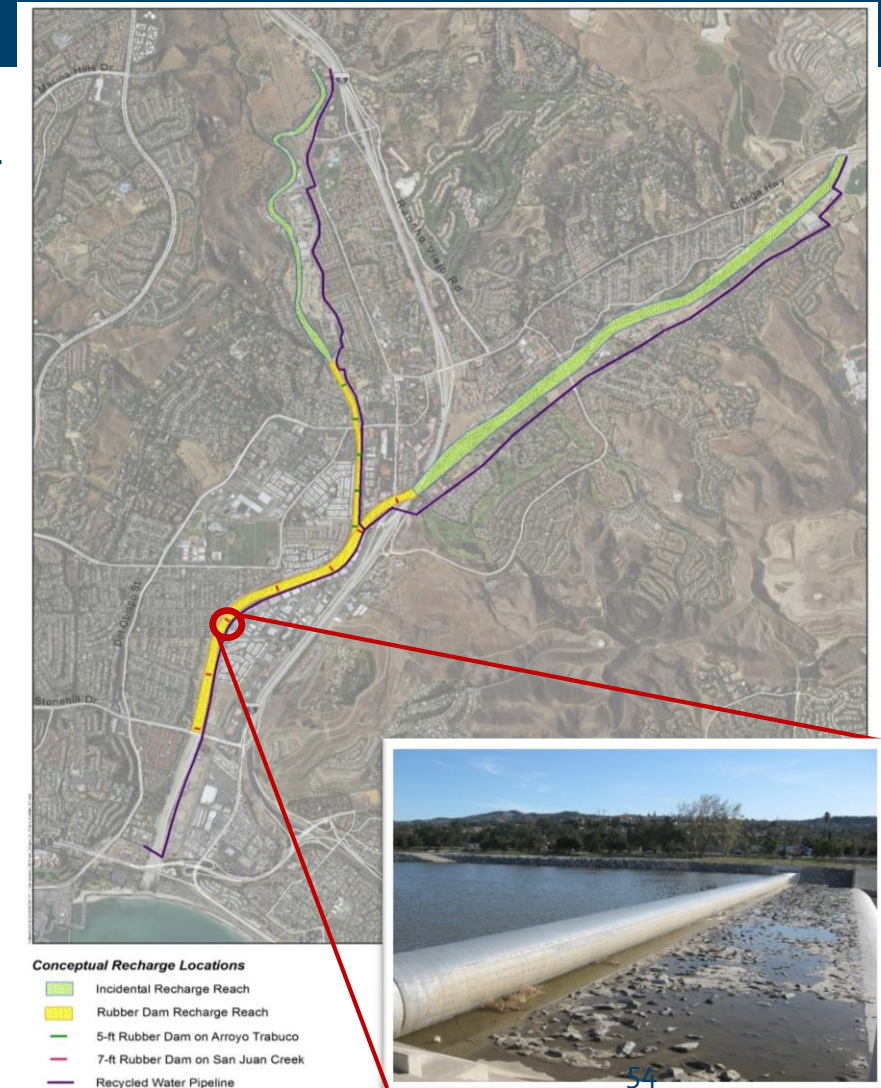
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Estimated Capital Cost	\$33,560,000	\$119,140,000	\$160,900,000
Unit Capital Cost (30-year Lifecycle)	\$1,530	\$1,580	\$2,170

- Unit costs do not include operating costs for the proposed facilities, which could add \$500 - \$800 per acre-foot to the total unit cost of the project.
- Costs do not include any potential funding offsets, including MWD LRP at \$340/AF

# DEVELOPED SAN JUAN BASIN GROUNDWATER AND DESALINATION OPTIMIZATION PROGRAM

- Implementation of Phase 1 and preparation for Phase 2
- \$1.7 Million program includes:
  - Development of programmatic EIR/EIS, coordination of project permitting
  - Development of preliminary design for rubber dams, recycled water facilities
  - Final design of rubber dams
  - Development of Water Rights Agreements
  - Review of existing groundwater treatment facilities and development of agreements for use
- Work to be initiated within the next 2 months





# DOHENY OCEAN DESALTER

# PROJECT STATUS

- South Coast Water District developing Environmental Impact Report
  - Plan to develop 5 MGD Plant
  - Opportunity to expand to 15 MGD Plant based on local participation
  - MNWD provided comment letter to Notice of Preparation
    - Water Quality Impacts
    - Brine Discharge
    - Product water distribution
- Updated cost estimate in May 2016
- Estimated schedule to be on-line in 2019